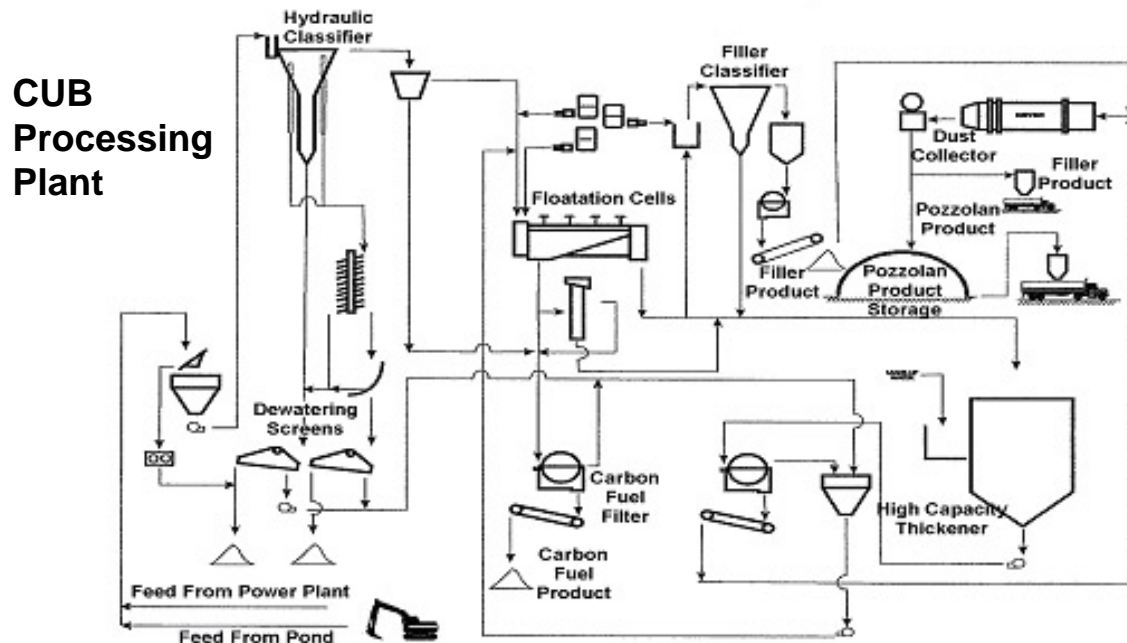


# University of Kentucky Research Foundation

- Next Generation Coal Ash Beneficiation Processing Plant addressing entire coal utilization by-product (CUB) stream and producing a variety of value-added products.
- Helps meet Climate Change goals: reduces emissions in cement manufacturing.
- Total Project funding: \$8.9 million (DOE share: \$4.4 million).



## A CCPI Round 1 Project



## **Background**

- **University of Kentucky Research Foundation will demonstrate an advanced coal-ash beneficiation processing plant that represents next generation in coal utilization.**
- **Project Location: Ghent Power Station, Ghent, KY.**
- **Team members:**
  - LG&E Energy Corporation, Louisville, KY
  - University of Kentucky Center for Applied Energy Research, Lexington, KY
  - Potential 3<sup>rd</sup> party participation



## **Background**

- **Process generates a range of useful products including:**
  - Pozzolan, a product that can replace up to 30% of Portland cement used to make concrete.
  - Lightweight aggregate suitable for use in concrete masonry units such as blocks.
  - A graded fill-sand for construction applications.
  - Unburned carbon product used as a supplemental fuel.
  - Very fine-sized material (~ 3-4 micron median particle size) suitable for use as a polymer filler or specialized pozzolan.



## **Technology Uniqueness**

- **University of Kentucky process for producing pozzolan used in concrete, achieves better concrete strength and performance, and can be used at higher substitution levels (30% vs. 20%).**
- **Process addresses entire coal utilization by-product (CUB) stream with a target of total CUB utilization and can use existing disposal pond ash.**
- **Process is based on hydraulic classification and froth flotation technology developed at University of Kentucky Center for Applied Energy Research.**
- **This project generates a range of high-value and consistent quality products from waste ash.**



# – **Schedule**

- **NEPA Process**

- EA, FONSI expected by July 2004

- **Design**

- To be determined

- **Construction**

- To be determined

- **Commissioning and Startup**

- To be determined



## **Potential Benefits**

- A beneficial use for ash stored in power plant ash-settling ponds across U.S. will be demonstrated, reducing need for new ponds, extending life of existing ponds, and potentially eliminating need for new ponds.
- Pozzolan production (156,000 tons per year) will be used to replace an equivalent amount of Portland cement resulting in significant greenhouse gas offset. Portland cement manufacture results in release of ~1 ton of CO<sub>2</sub> per ton of cement produced. Current operations release ~47 million tons per year in U.S. Use of coal ash in cement manufacturing is a pathway for reducing future CO<sub>2</sub> emissions.

